

Subcommittee on Water, Power and Oceans

Doug Lamborn, Chairman

Hearing Memorandum

May 1, 2017

To: All Subcommittee on Water, Power and Oceans Members

From: Majority Committee Staff, Subcommittee on Water, Power and Oceans (x5-8331)

Hearing: Oversight Hearing on *“The Challenges of Keeping Hydropower Affordable and Opportunities for New Development.”*

On Wednesday, May 3, 2017, at 2:30 pm in 1324 Longworth House Office Building, the Water, Power and Oceans Subcommittee will hold a one-panel oversight hearing on *“The Challenges of Keeping Hydropower Affordable and Opportunities for New Development.”*

Policy Overview:

- For decades, hydropower has been the nation’s leading and most reliable source of renewable energy, producing clean, renewable, and relatively low-cost electricity that can also be used to support variable generation resources like wind and solar.
- Compliance with environmental mandates and federal court-mandated “spills” has led to lost hydropower generation and higher power costs that are ultimately passed on to electricity ratepayers.
- There are opportunities to develop additional hydropower capacity through pumped storage, non-powered dams and upgrades to existing hydropower dams, but market conditions, the federal regulatory process and other factors can be impediments for increased production.

Invited Witnesses (listed in alphabetical order):

Mr. Bob Gallo
President & CEO
Voith Hydro Inc.
York, Pennsylvania

Mr. Randy S. Howard
General Manager
Northern California Power Agency
Roseville, California

Mr. Herbie Johnson
President
National Hydropower Association
Birmingham, Alabama

Mr. George Lapointe
Owner, George Lapointe Consulting
Hallowell, Maine

Mr. David Montage
Executive Vice President and General Manager
Sabine River Authority of Texas
Orange, Texas

Mr. Raymond Pierre III
Vice Chairman
Kalispel Tribe of Indians
Usk, Washington

Background:

Hydropower Overview

Hydropower is produced when water is released through dams and spun through turbine blades that are connected to generators to produce energy. In specific regions of the nation, it constitutes a significant source of electricity (i.e. 70% in Washington State).¹ Nationally, hydropower accounts for 7% of domestic electricity generation, divided equally between federal and non-federal output,² and about 48% of all renewable generation.³

Hydropower is renewable and emissions-free and can be adjusted quickly to match real-time changes in electricity demand. It not only provides power for baseload (full-time) needs and peak times, but also serves as a backup generation source for intermittent wind and solar power.⁴ It is generally low-cost compared to other generation sources.⁵ However, some believe

¹ <http://instituteforenergyresearch.org/media/state-regs/pdf/Washington.pdf>

² Congressional Research Service, Relicensing of Nonfederal Hydroelectric Projects, April 25, 2007; Page 1

³ <https://www.ferc.gov/legal/staff-reports/2017/hydropower-primer.pdf>

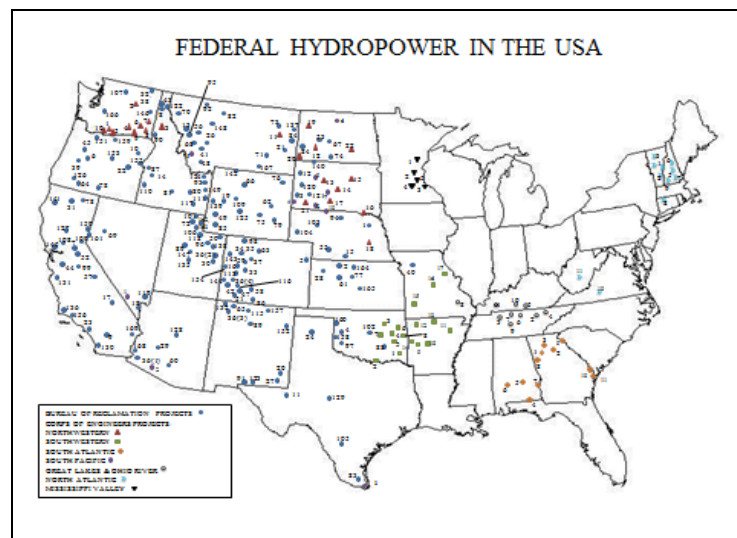
⁴ <http://www.vox.com/2015/6/19/8808545/wind-solar-grid-integration>

⁵ <http://www.hydro.org/why-hydro/affordable/>

hydropower projects can have negative impacts on migratory fish, wildlife and their habitats as well as water quality.⁶ For a number of reasons, some have described hydropower's growth as "stagnant" when compared to other electricity sources.⁷ This hearing will explore potential roadblocks to hydropower production and solutions that can be taken to promote this clean, renewable source of energy.

Federal Hydropower

Under numerous federal statutes, the U.S. Army Corps of Engineers (Corps) and the Bureau of Reclamation (Reclamation) generate hydropower at federal dams and reservoirs. The two agencies are the top hydropower generators in the nation.⁸ Reclamation's 58 hydropower facilities alone generate over \$900 million annually in power revenues.⁹ [See Map 1 and associated documents for Corps and Reclamation hydropower facilities.](#)



Map 1: Corps and Reclamation Facilities (as compiled by House Natural Resources Committee staff)

Under Reclamation's policy, hydropower is first used to provide electricity to operate irrigation pumps. Any remaining Reclamation hydropower is then primarily sold by either of two federal agencies, the Bonneville Power Administration (Bonneville) or the Western Area Power Administration (Western), to wholesale customers. The wholesale electricity rates are designed to repay the federal capital investment – plus interest – in federal electricity generation

⁶ <https://www.nwcouncil.org/history/DamsImpacts>

⁷ Testimony of Mr. J. Mark Robinson before the House Natural Resources Committee, June 27, 2012 on "Mandatory Conditioning Requirements on Hydropower: How Federal Resource Agencies are Driving Up Electricity Costs and Decreasing the Original Green Energy"

⁸ <http://www.usbr.gov/power/edu/majprod.html>

⁹ <http://www.usbr.gov/power/who/history.html>

and transmission facilities, annual operation and maintenance costs of such facilities, and federal staffing.¹⁰

Compliance with environmental mandates and replacement power services resulting from environmental regulation and litigation are also reflected in federal power rates. For example, long-standing litigation surrounding the Federal Columbia River Power System (FCRPS) has caused major uncertainty on power generation and rates. Federal court-mandated “spills” – an operation when water is bypassed from a hydropower producing turbine to aid fish passage – have led to lost hydropower generation and associated replacement power purchases of mainly fossil-based, higher cost energy. Higher levels of spill can actually be harmful to the fish they are purportedly intended to help. At a Water, Power and Oceans Subcommittee hearing last year, Mr. Christopher Downen, Senior Policy Analyst at the Public Power Council, which represents consumer-owned utilities in the Pacific Northwest, testified: “At \$757 million last year alone, this single category of costs accounted for about 30 percent of Bonneville’s costs charged in rates.”¹¹

In addition, the Central Valley Project Improvement Act (P.L. 102-575) mandated some federal power users to pay into a fund designed to restore parts of the Central Valley of California. At times, these payments and the other costs have put wholesale hydropower generated by the Central Valley Project and marketed by Western at “above market” rates. Western also sells power from the Glen Canyon Dam in Arizona, which has lost a third of its energy capacity¹² – or \$50 million annually in energy production – due to environmental requirements such as “pulse flows” where water bypasses the turbines. All of these costs are ultimately borne by electricity ratepayers.

Non-Federal Hydropower

Under the Federal Power Act (FPA), the Federal Energy Regulatory Commission (FERC) has authority to license non-federal hydropower facilities. There are approximately 1,030 active, non-federal hydropower licenses currently issued by (FERC),¹³ however, over the next five years, 24% of all non-federal hydropower capacity will face relicensing.¹⁴

¹⁰ Id

¹¹ Testimony of Mr. Christopher Downen, Senior Policy Analyst, Public Power Council, before the House Water, Power and Oceans Subcommittee, April 20, 2016.

¹² AZcentral.com; Fact Check. The Issue: Glen Canyon Dam Hydropower Production, July 27, 2011

¹³ <http://www.ferc.gov/industries/hydropower/gen-info/licensing/active-licenses.asp>

¹⁴ www.ferc.gov/industries/hydropower/gen-info/licensing/relicensing2015-2030.xlsx

Most licenses are valid for 30 to 50 years;¹⁵ however the process to relicense facilities can be complex, expensive, lengthy and uncertain. During licensing or relicensing, FERC must consider the power aspect of the project, but must give equal consideration to energy conservation, fish and wildlife, recreational opportunities and other federally mandated needs. These considerations are the result of additions to the FPA over the last 30 years.¹⁶ While FERC has the authority to license these facilities, the resource agencies under the jurisdiction of the House Natural Resources Committee have imposed significant mandates on the licenses and the process to grant them due to FPA and federal environmental statutes like the Endangered Species Act. These resource agencies include the National Marine Fisheries Service, the U.S. Forest Service, the U.S. Fish and Wildlife Service, the Bureau of Land Management, Reclamation and the Bureau of Indian Affairs.

Specifically, under Section 4(e) of the FPA, federal land and water agencies can require “mandatory conditions” for projects located on federal reservations under their jurisdiction. The term “reservation lands” is defined to include national forests, Indian lands, and any other lands “acquired and held for public purposes.”¹⁷ FERC cannot reject such “mandatory conditions” regardless of cost or impacts. Under Section 18 of the FPA, the Secretaries of the Interior and Commerce can require “fishways” or specific conditions related to fish passage facilities at hydropower projects.¹⁸ In addition, Section 10(j) of the FPA requires that licenses must include conditions based on recommendations by federal and state fish and wildlife agencies for the protection, mitigation or enhancement of fish and wildlife resources affected by the project unless FERC can find that they are inconsistent with the purpose of the project.¹⁹ Before rejecting any of these recommendations, FERC must show that it gave due weight to the recommendations and tried to resolve any inconsistencies.

Due to the above requirements, licensees may informally begin the relicensing process a decade or more before expiration. Despite some statutory changes to these sections of the FPA in the Energy Policy Act of 2005 (P.L. 109-58 or EAct of 2005), some find the current process costly and difficult. For example, Ms. Debbie Powell, Senior Director of Power Generation Operations at the Pacific Gas and Electric Company (PG&E) in California, testified at an April 2016 Water, Power and Oceans Subcommittee hearing:

¹⁵Northwest Hydroelectric Association, Resources: Law and Regulations: Hydropower Licensing, www.nwhydro.org/resources/laws_regulations/hydropower_licensing.htm; Page 1

¹⁶ <https://www.fws.gov/laws/lawsdigest/FEDPOWR.HTML>

¹⁷Northwest Hydroelectric Association, Resources: Law and Regulations: Hydropower Licensing, www.nwhydro.org/resources/laws_regulations/hydropower_licensing.htm; Page 2

¹⁸Northwest Hydroelectric Association, Resources: Law and Regulations: Hydropower Licensing, www.nwhydro.org/resources/laws_regulations/hydropower_licensing.htm; Page 2

¹⁹ Northwest Hydroelectric Association, Resources: Law and Regulations: Hydropower Licensing, www.nwhydro.org/resources/laws_regulations/hydropower_licensing.htm p. 2

*“As it stands today... the prescribed licensing processes in place are overly complex, unnecessarily protracted, insufficiently coordinated, and needlessly expensive. In the simplest terms, we strongly support greater efficiency and transparency in the relicensing process, and the expeditious conclusion of the relicensing process so that the environmental protection and benefits negotiated during the process can be implemented faster and more efficiently”*²⁰

Additionally, the cost to PG&E customers to obtain a license renewal has routinely exceeded \$20 million per license, and implementing the mandatory conditions of an approved license also routinely costs tens of millions of additional dollars.²¹ Witnesses will discuss these issues at the hearing.

In a June 2012 Committee on Natural Resources hearing on mandatory conditioning, a former FERC Director of Energy Projects testified that in 2011, the average time from filing the application to the approval of all sixteen hydropower licenses issued by FERC was still 3.6 years with the longest being 8 years. He testified that continued “dispersed decision-making remains the primary cause of not only delay, but also additional costs associated with the preparation of the application and the cost of mandatory conditions.”²² A number of provisions aimed at reforming the hydropower relicensing process were included in both the House (H.R. 8)²³ and Senate (S. 2012)²⁴ energy bills last Congress. These reforms were designed to build more structure, accountability and certainty into the licensing and permitting process. Some of these reforms include: designating one lead agency for siting authority, encourage pre-filing in order to quickly identify issues and significant flaws early in the process, require resource agencies to clearly define the objective of each mandatory condition, and hold agencies accountable by requiring them to adhere to timelines set by the lead agency, among others.²⁵

Other factors can impact existing hydropower facilities on federal lands. For example, high intensity, catastrophic wildfires and run-off from rain events sometimes causes significant deposits of sediment and debris into reservoirs. For example, in 2014, the King Fire burned 153 square miles of private and USFS lands in California. Subsequent rain washed sediment, trees and other debris into surrounding lakes and reservoirs. Mr. Andy Fecko, Director of Resource Development for the Placer County Water Agency (PCWA) testified at a House Federal Lands

²⁰ Testimony of Ms. Debbie Powell, Senior Director of Power Generation Operations, Pacific Gas and Electric Company, before the House Water, Power and Oceans Subcommittee, April 27, 2016, p. 3.

²¹ Id.

²² Testimony of Mr. J. Mark Robinson, JMR Energy Infra, before the House Natural Resources Committee on “Mandatory Conditioning Requirements on Hydropower: How Federal Resource Agencies are Driving Up Electricity Costs and Decreasing the Original Green Energy”, June 27, 2012; Page 7

²³ <https://www.gpo.gov/fdsys/pkg/BILLS-114hr8rfs/pdf/BILLS-114hr8rfs.pdf>

²⁴ <https://www.gpo.gov/fdsys/pkg/BILLS-114s2012es/pdf/BILLS-114s2012es.pdf>

²⁵ Id.

Subcommittee hearing in 2015 that “Once this debris enters lakes and reservoirs, it fills in valuable storage space, blocks spillways and ruins equipment and generating machinery.”²⁶ Some water agencies have experienced difficulties getting permission from the USFS to dispose of these materials which originated on the agencies lands. A witness will bring this issue up at the hearing.

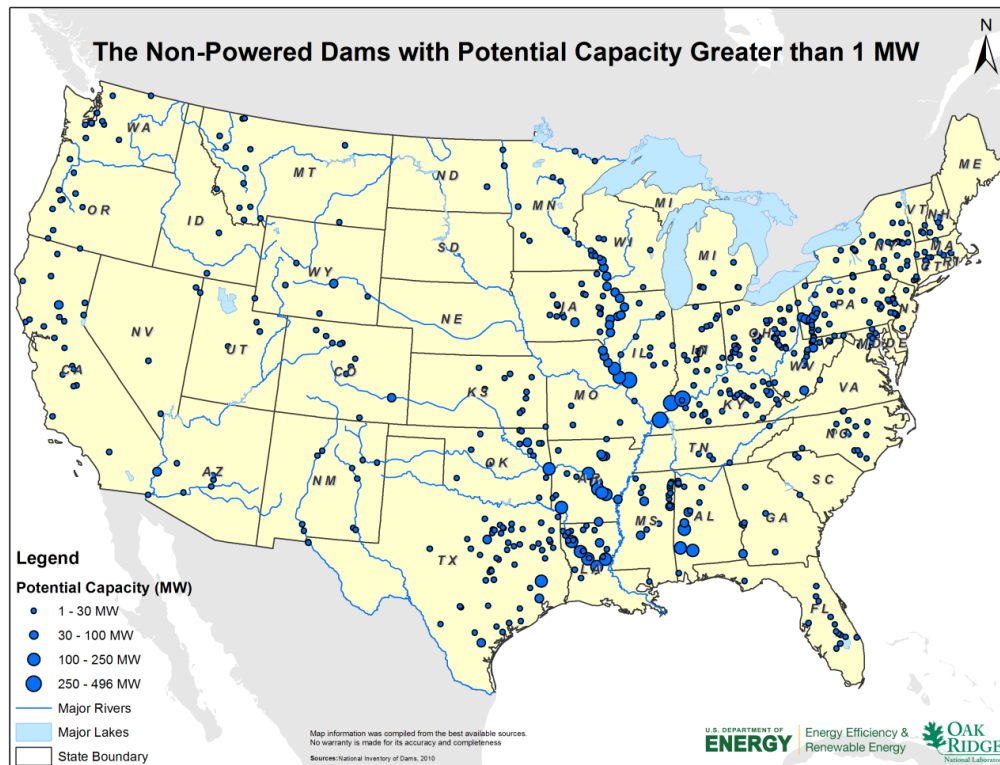
Potential for New Hydropower Resources

There are opportunities nationwide to develop new hydropower production through upgrades to existing hydropower dams, non-powered dams and pumped storage. According to the Department of Energy, U.S. hydropower could have the potential to produce an additional 49,000 megawatts through combined generating and storage capacity.²⁷ In its April 2012 report, the Oak Ridge National Laboratory (ORNL) found that up to 260 megawatts of new capacity could be added at Reclamation facilities alone (ORNL examined sites that would be over 1 megawatt) (See Map 2).²⁸ While this potential for development exists, there are significant challenges for this additional capacity to be developed.

²⁶ Testimony of Mr. Andrew Fecko, Director of Resource Development, Placer County Water Agency, before the House Federal Lands Subcommittee, April 23, 2015, p. 3.

²⁷ U.S. Department of Energy, Hydropower Vision Report, p.1.

²⁸ www1.eere.energy.gov/water/pdfs/npd_report.pdf



Map 2: Source: Oak Ridge National Laboratory April 2012 Report “An Assessment of Energy Potential at Non-Powered Dams in the United States”

One such challenge is the development of new pumped storage hydropower. According to Reclamation, the national potential for new pumped storage is 34,000 MW, although it would be far less at the agency’s facilities.²⁹ There is confusion over which federal agency would oversee pumped storage at certain Reclamation facilities. In some cases, Reclamation has clear authority to develop hydropower at a specific project given its legislative history and authorized project purposes. In other cases, FERC could have the authority if the underlying project’s authorization did not specifically include hydropower as a component.

To help clarify this permitting confusion, Representative Doug Lamborn (R-CO) introduced H.R. 1967, the “*Bureau of Reclamation Pumped Storage Hydropower Development Act*.”³⁰ The bill authorizes pumped storage hydropower development that exclusively utilizes Reclamation reservoirs. The development of new hydropower can also be achieved through the expansion of existing hydroelectric facilities. For example, the Kodiak Electric Association (KEA) in Alaska is looking to expand the Terror Lake Hydroelectric Project to meet the islands growing electricity demand. Increased generation capacity must come from either the expansion

²⁹ <https://www.usbr.gov/power/video/index.html>

³⁰ <https://www.gpo.gov/fdsys/pkg/BILLS-115hr1967ih/pdf/BILLS-115hr1967ih.pdf>

of the hydropower project or through increased diesel fuel imports. To help expedite this expansion, Rep. Don Young (R-AK) introduced H.R. 220,³¹ which would help facilitate the expansion of the proposed project. Both of these bills passed the Natural Resources Committee without objection last month.

³¹ <https://www.gpo.gov/fdsys/pkg/BILLS-115hr220ih/pdf/BILLS-115hr220ih.pdf>